NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

PEST MANAGEMENT

(Acre)
CODE 595

DEFINITION

Utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies, to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.

PURPOSES

This practice is applied as part of a Resource Management System (RMS) to support one or more of the following purposes:

- Enhance quantity and quality of agricultural commodities.
- Minimize negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources and/or humans.

CONDITIONS WHERE PRACTICE APPLIES

Wherever pests will be managed, for all land uses.

CRITERIA

General Criteria Applicable to All Purposes

A pest management component of a conservation plan shall be developed.

All methods of pest management must comply with Federal, State, and local regulations, including management plans for invasive pest species, noxious weeds and disease vectors. Compliance with the Food Quality Protection Act (FQPA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Worker Protection Standard (WPS); and Interim Endangered Species Protection Program (H7506C) is required for chemical pest control.

Integrated Pest Management (IPM) that strives to balance economics, efficacy and environmental risk, where available, shall be incorporated into planning alternatives. IPM is a sustainable approach to pest control that combines the use of prevention, avoidance, monitoring and suppression strategies, to maintain pest populations below economically damaging levels, to minimize pest resistance, and to minimize harmful effects of pest control on human health and environmental resources. IPM suppression systems include biological controls, cultural controls and the judicious use of chemical controls. New Mexico State University (NMSU) has a fact sheet, “Improving Pesticide Use and Integrated Pest Management”, Farmstead Assessment System Fact Sheet #13 at http://cahe.nmsu.edu/pubs/farmasyst/fasfacts.html. It outlines the basic principles of IPM in NM. Additional NMSU publications on integrated pest management may be downloaded from http://www.cahe.nmsu. edu/pubs. and found

in Water Quality Technical Note 13

At a minimum, scouting (establishing an economic threshold for control) or a pest inventory must be completed before a pesticide can be used. See Water Quality Technical Note 15 for threshold levels.

An appropriate set of mitigation or conservation treatment techniques must be planned and implemented to reduce the environmental risks of pest management activities in accordance with quality criteria in the local Field Office Technical Guide. Conservation treatment techniques include practices like a Filter Strip or Conservation Crop Rotation, and management techniques like application method or timing (See Water Quality Technical Note 8 for a Summary of Mitigation Options for Nutrient and Pest Management or summarized in Table 1 (Conservation Treatment Technique Summary Guide for Pesticide Losses).

All methods of pest management must be integrated with other components of the conservation plan.

Pay special attention to all environmental hazards and site-specific application criteria listed on pesticide labels and contained in Extension and Crop Consultant recommendations.

Restricted-Use pesticide application requires a record of application. Those records must be keep for two years, and follow the Federal Pesticide Recordkeeping Program's guidelines. See http://www.ams.usda.gov/science/sdpr.htm.

Restricted-use pesticides require an applicator's license for purchase and use. See Water Quality Technical Note 7 for Restricted Use Pesticides Dealers Reference.

Additional Criteria to Protect Quantity and Quality of Commodities

As an essential component of both commodity-specific IPM and IPM general principles, clients shall be encouraged to use the minimum level of pest control necessary to meet their objectives for commodity quantity and quality.

Additional Criteria to Protect Soil Resources

In conjunction with other conservation practices, the number, sequence and timing of tillage operations shall be managed to maintain soil quality and maintain soil loss at or below the soil loss tolerance (T) or any other planned soil loss objective. The Wind Erosion Equation (WEQ), Agronomy Technical Note 27 and the Revised Universal Soil Loss Equation, Agronomy Technical Note 28 will be used for erosion estimation. The Soil Conditioning Index (SCI), Agronomy Technical Note 42 will be used to estimate cropping system sustainability. The crop management system must have a neutral (0) or positive (+) SCI. See http://www.nm.nrcs. usda.gov/techserv/TechNotes/agro.htm.

Follow pesticide label instructions for limiting pesticide residues in soil that may negatively impact non-target plants, animals and humans.

Additional Criteria to Protect Water Resources

Pest management environmental risks, including the impacts of pesticides in ground and surface water on humans and non-target plants and animals, must be evaluated. NRCS NM will use NRCS' Windows Pesticide Screening Tool (WIN-PST) to evaluate the environmental risks using specific pesticides. See Water Quality

Technical Note 9 on the Windows Pesticide Screening Tool.

When a pest management alternative has significant potential to negatively impact important water resources, (e.g., WIN-PST "Extra High", "High" or "Intermediate" soil/pesticide human risk ratings in the drainage area of a drinking water reservoir), an appropriate set of conservation treatment techniques must be put in place to address risks to humans and non-target plants and animals. Pesticide alternatives with a WIN-PST soil/pesticide Hazard risk rating of "Extra High", "High" or "Intermediate" rating shall be accompanied by one or more conservation treatment techniques. Selection of conservation treatment techniques shall be based on site-specific resource concerns and pesticide loss pathways. Table 1 contains a list of conservation treatment techniques, which can help reduce the adverse impacts of pesticides, depending upon pesticide loss pathways. Effects are rated as slight (+/-), moderate (++/--) or significant (+++/---).

Follow pesticide label instructions for limiting pesticide residues in leachate and runoff that may negatively impact non-target plants, animals and humans.

The number, sequence and timing of tillage operations shall be managed in conjunction with other sediment control tactics and practices, in order to minimize sediment losses to nearby surface water bodies. Structural practices such as Terracing, Sediment Ponds, and Grassed Waterways should be considered.

Irrigation Water Management must be included where using pesticides on irrigated land that pose a risk to water quality for runoff and for ground water.

Additional Criteria to Protect Air Resources

Follow pesticide label instructions for minimizing volatilization and drift that may negatively impact non-target plants, animals and humans.

Additional Criteria to Protect Plant Resources

Follow pesticide label instructions including those directed at:

- Preventing misdirected pest management control measures that negatively impact plants (e.g., removing pesticide residues from sprayers before moving to the next crop and properly adjusting cultivator teeth and flame burners).
- Appropriate climatic conditions, crop stage, soil moisture, pH, and organic matter in order to protect plant health.
- Limiting pesticide residues in soil that can carry over and harm subsequent crops.

Additional Criteria to Protect Animal Resources

Follow pesticide label instructions that minimize negative impacts to domestic animals, wildlife, and aquatic organisms.

Additional Criteria to Protect Humans

Read and follow all label instructions, as well as local, state, and federal regulations regarding posting and field re-entry restrictions on treated areas.

Handle and apply pesticides properly to protect the user and the environment from adverse effects.

Store pesticides according to label directions and as specified by local, state and federal regulations.

CONSIDERATIONS

When commodity-specific IPM is not available, the following IPM principles should be considered as well as the principles listed in the New Mexico Farm A Syst fact sheet #13 (see above for web address):

- Prevention, such as using pest-free seeds and transplants, cleaning tillage and harvesting equipment between fields, irrigation scheduling to avoid situations conducive to disease development.
- Avoidance, such as using pest resistant varieties, crop rotation, and trap crops.
- Monitoring, such as pest scouting, pest inventory, soil testing, and weather forecasting, to help target suppression strategies and avoid routine preventative pest control.
- Suppression, such as cultural, biological and chemical controls, that can reduce a pest population or its impacts. Chemical controls should be used judiciously in order to minimize environmental risk and pest resistance.

Adequate plant nutrients and soil moisture, including favorable pH and soil conditions, should be available to reduce plant stress, improve plant vigor and increase the plant's overall ability to tolerate pests.

PLANS AND SPECIFICATIONS

The pest management component of a conservation plan shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s).

As a minimum, the pest management component of a conservation plan shall include:

- Plan map and soil map of managed site, if applicable (use RMS plan maps).
- Location of sensitive resources and setbacks, if applicable (use RMS plan maps).
- Environmental risk analysis (the WIN-PST Soil/Pesticide Interaction Loss Potential and Hazard Rating Report) for probable pest management recommendations.
- Interpretation of the environmental risk analysis and identification of selected appropriate conservation treatment techniques. Hazard Ratings of ‘Low’ or ‘Very Low’ require no further action if they are used according to the label and meet quality criteria for Resource Management Systems (RMSs). IPM methodologies, where available, shall be incorporated into planning alternatives, even when soil-pesticide interaction hazard ratings are ‘Low’ or ‘Very Low’. Hazard Ratings of ‘Intermediate’ or ‘High’ require conservation treatment techniques to meet quality criteria for an RMS. ‘High’ ratings warrant more extensive treatment than ‘Intermediate’ ratings. Conservation treatment techniques may not be effective for ‘Extra High’ hazard ratings. In these cases, an effective, economically acceptable pesticide with a lower environmental risk or an alternate method of pest control shall be considered. In the case of ‘extra high’ leaching hazard for fish and humans and located in a sensitive area, conservation treatment techniques are considered to not be effective and the planner shall suggest selection of another alternative.
- Operation and maintenance requirements.

OPERATION AND MAINTENANCE

The pest management component of a conservation plan shall include appropriate operation and maintenance items for the client. These may include:

- Review and update the plan periodically in order to incorporate new IPM technology, respond to cropping system and pest complex changes, and avoid the development of pest resistance.
- Maintain conservation treatment techniques identified in the plan in order to ensure continued effectiveness.
- Develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers for individuals exposed to chemicals and the telephone number for the nearest poison control center. The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon may also be given for non-emergency information:

  1-800-858-7384

  7 days
  6:30 a.m. to 4:30 p.m. Pacific Time
  http://npic.orst.edu

  For advice and assistance with emergency spills that involve agrichemicals, call the NM Department of Agriculture statewide at 1-800-432-5310 or 505-841-9425 (Albuquerque) or call the 24-hour Emergency Hotline of New Mexico Environment Department at 505/827-9329 (Collect calls are accepted). The national 24-hour CHEMTREC telephone number may also be given:

  1-800-424-9300

  For information on pesticide use in New Mexico and a list of currently licensed pesticides, call:

  1-800-432-5310

  The New Mexico Pesticide Control Act law can be viewed and printed from:

  http://nmdaweb.nmsu.edu/Statutes/AES/PM/pesticid.htm and

  http://nmdaweb.nmsu.deu/NMAC/AES/PM/ pesticid.htm

- Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, or reservoirs.. Load and mix pesticides at least 100 feet away from wells, high runoff areas, ponds, lakes, streams, and other water bodies or other hydrologically-sensitive areas.
- Post signs according to label directions and/or Federal, State, and local laws around sites that have been treated. Follow restricted entry intervals.
- Dispose of pesticides and pesticide containers in accordance with label directions and adhere to Federal, State, and local regulations. See NM Pesticide Control Act for the State requirements, 76-4-30. Also, New Mexico Farm-A-Syst, Fact Sheet #2, Improving Pesticide Storage and Handling, is available at http://cahe.nmsu. edu/pubs/farmasyst/. This self-help assessment tool should be used to indicate and reduce a risk of groundwater contamination due to improper storage and handling .
- Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS). MSDSs can be printed as needed from the Cornell maintained site.

http://msds.pdc.cornell.edu/msdssrch.asp

or the Greenbook site: http://www.greenbook.net/index.html.

- Calibrate application equipment according to Extension and/or manufacturer recommendations before each seasonal use and with each major chemical change. See general information in Applying Pesticides Correctly. A New Mexico State University Guide for Commercial and Non-commercial Applicators. April 1991. Also see NMDA Pesticide Applicator's Manual.
- Replace worn nozzle tips, cracked hoses, and faulty gauges.

Maintain records of pesticide application for restricted use materials for at least two years. Pesticide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Record Keeping Program http://www.ams.usda.gov/science/sdpr.htm. A list of federally registered restricted use pesticides is available at http://entweb.clemson.edu/pesticid/document/fedrup.htm. New Mexico restricted use pesticides are included in NMDA. Restricted Use Pesticides 2001 Dealer's Reference (Water Quality Technical Note 7).

TABLE I – Conservation Treatment Technique Summary Guide for Pesticide Losses

Conservation Treatment:	Pesticide Loss Pathways[1]			Comments
	Leaching	Adsorption	Runoff	
Management Practices [2]				
Biological	++	++	++	Pesticide use can be reduced.
Cultural (planting dates)	++	++	++	Pesticide use can be reduced
Cultural (variety)	++	++	++	Pesticide use can be reduced
Formulation	+++	+	+	Less soluble pesticides move slower
Lower Application Rate	+++	++	++	Most effective with highly soluble pesticides
Mechanical (grubbing)	++	++	++	Pesticide use can be reduced
Mechanical (pruning)	++	++	++	Pesticide use can be reduced
Mechanical (roller chop)	++	++	++	Pesticide use can be reduced
Mechanical (tillage)	++	++	++	Pesticide use can be reduced
Mechanical (vacuum)	++	++	++	Pesticide use can be reduced
Mechanical (weeding)	++	++	++	Pesticide use can be reduced
Partial Substitution	+++	++	++	Use pesticides with lower environmental risk
Partial Treatment	++	+++	+++	Banding and directed spraying, most effective with strongly adsorbed pesticides
Scouting	+++	+++	+++	Required to identify pest to be controlled; apply pest management based on economic threshholds
Set-back	++	++	++	Greater distance from surface water and less inadvertent application to water body, greater distance to entry point
Soil Incorporation	+	++	++	Reduces amount of pesticides at the soil surface, reduces macropore flow
Timing of Application	+++	+++	+++	Pesticide losses decrease with time between application and storm events
Conservation Practices [3]				
Conservation Cover (327)	+	+++	+++	For use when land is retired from production
Conservation Crop Rotation (328)	++	+++	+++	Pesticide use can be reduced due to rotational effects on pest complex
Constructed Wetland	-	+	+++	Deposition of sediment and treatment of runoff; leaching can be expected below wetlands
Contour Buffer Strips		+++	+++	Control runoff and sediment losses
Contour Farming (330)		+	+	Infiltration improved, runoff reduced
Contour Orchard (331)		+	+	Control runoff and sediment losses somewhat
Contour Strip Cropping (585)		++	++	Infiltration within close growing crop strip decreases runoff slightly; sediment is deposited in the field
Cover Crop (340)	+	++	+	Reduces transport of adsorbed pesticides
Cross Wind Trap Strips (589)		++		Reduces transport of adsorbed pesticides

Field Border (386)		+++	++	Buffer action reduces runoff and suspended sediment
Filter Strip (393)	+	+++	++	Reduces runoff, sediment deposited above filter strip
Forage Harvest Management (511)	++	+++	+++	Scheduling harvest periods effectively to control pests can reduce pesticide use.
Grade Stabilization Structure (410)		+++		Reduces mass movement of soil and adsorbed pesticides
Grassed Waterway (412)	+	++	+	Some trapping of adsorbed pesticides
Irrigation Land Leveling (464)	+	++		Reduction of suspended sediment and transport of adsorbed pesticides
Irrigation System Tail Water Recovery (447)	-	++	++	Reductions in runoff and suspended sediment
Irrigation Water Management (449)	++	+	+	Reductions in runoff and suspended sediment

TABLE I – Practice Summary Guide for Pesticide Losses (Cont'd)

Practice	Pesticide Loss Pathways			Comments
	Leaching	Adsorption	Runoff	
Pasture and Hay Planting (512)	++	+++	+++	Rotation including perennial grasses and legumes generally require fewer pesticides
Prescribed Grazing (528A)		+++	++	Proper management of grazing and browsing animals improves plant health reducing the need for pesticides
Residue Management, No-Till (329A)		++	++	Significant reduction in adsorbed and highly soluble pesticide leaving a field
Residue Management, Mulch-Till (329B)		+++	++	Significant reduction in adsorbed and highly soluble pesticide leaving a field
Residue Management, Ridge Till (329C)		+++	++	Significant reduction in adsorbed and highly soluble pesticide leaving a field
Residue Management, Seasonal (344)		++	+	Slight to moderate reductions in adsorbed and highly soluble pesticides leaving a field
Riparian Forest Buffer (391)	+	+++	+++	Slight to significant reduction in pesticide contamination of shallow ground water and surface water
Riparian Herbaceous Cover (390)	++	+++	+++	Slight to significant reduction in pesticide contamination of shallow ground water and surface water
Row Arrangement (557)		++	++	Slight to moderate reduction in runoff and sediment loss.
Sediment Basin (350)		++	++	Moderate reduction of sediment and runoff
Subsurface Drainage (606)	++	++	-	Moderate reductions in pesticide movement in ground water and adsorbed pesticides on suspended sediment
Terrace (600)	-	+++	++	Moderate to significant reductions of runoff and suspended sediment carrying soluble or adsorbed pesticides
Tree and Shrub Establishment (612)	++	+++	+++	Moderate to significant reductions in pesticide usage
Waste Storage Facility (313)	+	++	++	Wastes containing pesticide residues are properly contained and not exposed to environmental element
Waste Treatment Lagoon (359)		+++	+++	Pesticides in runoff and adsorbed to suspended sediment are captured and degraded
Waste Utilization (633)	+	++	+	Increased microbial degradation of pesticide residues
Water & Sediment Ctrl. Basin (638)		++	++	Moderate reduction of sediment and runoff
Well Decommissioning	+++			Closure of entry points of pesticides into

(351)				ground water
Wetland Wildlife Habitat Management (644)	++	++	++	Filtering and degradation of pesticides entering wetland environments
Windbreak Establishment (380)				To control air movement avoiding physical or volatile chemical drift.

[1] Effects are rated as slight (+/-), moderate (++/--), or significant (+++/---).

[2] Additional information on management practices can be obtained from pesticide labels, NMSU pest management publications, and pest management consultants.

[3] Details regarding the effects of conservation practices on surface and ground water contamination by pesticides are contained in the Conservation Practice Physical Effects found in the National Handbook of Conservation Practices.